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The Economics of Honey Production Alberta, 1999

by

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G. Nabi Chaudhary

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SECTION I

INTRODUCTION

Cost and Returns for livestock, crops and several other enterprises have been monitored in the province in an extensive way since the 1960's. These studies have been viewed as an important tool for assisting producers in their cropping decisions and the federal and provincial governments in developing policies and programs for the different farm enterprises. Where information gaps existed in other provinces, results from these studies have served as the basis to fill those gaps.

Production costs and returns for the beekeeping (honey production) sector of the agriculture industry have been monitored periodically since the early 1970's. The 1999 costs and returns study is a continuing effort to monitor honey production in the province. Information presented in this report can be used for a variety of reasons including program evaluation and policy developments for the honey industry. It would also assist individual study participants to compare their costs and returns with the group averages to develop/manage their operations better.

OBJECTIVES OF THE STUDY

Following are the objectives of this study:

1. To determine production costs and returns associated with beekeeping in Alberta.
2. To establish physical input/output relationships for beekeeping in Alberta.
3. To provide each study participant with a detailed analysis of his/her beekeeping operation and an opportunity to compare the operation with the group averages.
4. To observe regional differences in costs and returns for beekeeping operations across the province.
5. To document how variation in size of operation affects net returns.
6. To provide an up-to-date economic report on the beekeeping in Alberta to assist governments in developing programs and policies for this industry.

THE STUDY SAMPLE

A total of 35 beekeepers were randomly selected across the province to obtain production costs and returns data for the 1999 year. Attempt was made to obtain data from all of the selected participants. However, only 24 beekeepers could be visited to obtain the needed information for the 1999 study. The results presented in this report are based on a sample of 24 beekeepers comprised of sixteen (16) honey producers and eight (8) pollination operations in Alberta. Regional breakdown of the 16 beekeepers sample was as follows:

Group	Region	Number of Participants	Average Number of Hives per Beekeeper
I	Southern (1) Central (2) North-East (3)	7	698
II	North-West (4)	6	1731
III	Peace River (5)	3	722
	TOTAL	**16**	**1154**

The study sample of 16 honey producers was further divided into the following three groups by size of operation:

Group	Size of Operation	Number of Participants	Average Number of Hives per Beekeeper
IV	Up to 600 Hives	7	277
V	601 to 1,000 Hives	4	794
VI	Over 1,000 Hives	5	2568
	TOTAL	**16**	**1154**

Number of hives for both pollination and honey operations in the study sample was 49,914 for the 1999 honey production year, i.e., about 24 percent of the total number of hives in the province. The largest honey producer operated 12,000 hives and the smallest about 125 hives during the 1999 honey production year.

SECTION II

METHOD OF ANALYSIS

The raw data obtained from 24 beekeepers across the province was reviewed for information gaps before entering into the computer for analysis. Individual analyses, provincial and group averages (by region and size of operation) were developed using the Paradox program.

HONEY PRODUCTION IN ALBERTA

Honey production in Alberta has widely fluctuated during the last several decades. Similarly, the number of beekeepers in the province has varied considerably since the seventies. It has ranged from a low of 725 beekeepers in 1999 to 2,000 in 1975 and 1976. Since 1985, the number of beekeepers has steadily declined from 1,700 to 725 in 1999, a decrease of over 57 percent. However, during the last three years, the number of beekeepers in Alberta has been around 725.

The number of honey producing colonies during the last two decades has also fluctuated considerably, i.e., ranging from 110,000 in 1970 to 205,000 in 1999. The number of colonies per beekeeper increased steadily from 160,000 in 1980 to 193,000 in 1987. However, in 1988, the number of colonies decreased by 22 percent to 150,000. Similarly, the number of beekeepers also declined by about 23 percent (from 1,480 to 1,140) in 1988. In 1989, the number of beekeepers further decreased by 25 percent to 855. Since 1994, the number of commercial beekeepers in the province has been around 750. The number of colonies per beekeeper has been increasing since 1994 reaching 205,000 in 1998. In 1999, Alberta had a record 205,000 producing colonies owned and operated by 725 beekeepers (283 colonies per beekeeper). A historical summary of the number of beekeepers, colonies, colonies per apiary (beekeeper), production per colony and price of honey received by beekeepers in Alberta (1970 to 1999) is presented in Table 1.
Figures 1, 2 and 3 present the trends from 1970 to 1999 regarding the number of colonies in Alberta, production per colony and honey price per pound, respectively.

TABLE 1:

HISTORICAL DATA ON HONEY PRODUCTION IN ALBERTA, 1970 - 1999

Year	Number of Beekeepers	Number of Colonies	Colonies Per Apiary	Production Per Colony (lbs.)	Price Per Pound (cents)
1970	1,200	110,000	92	194	14.0
1971	1,200	115,000	96	196	20.0
1972	1,20	130,000	108	154	31.0
1973	1,300	145,000	112	150	46.0
1974	1,800	156,000	87	149	46.0
1975	2,000	158,000	79	128	39.9
1976	2,000	160,000	80	88	37.2
1977	1,800	165,000	92	130	43.1
1978	1,800	160,000	89	125	50.8
1979	1, 700	150,000	88	150	57.2
1980	1,800	160,000	89	141	58.1
1981	1,700	170,000	100	116	64.4
1982	1,650	174,000	105	104	62.2
1983	1,610	172,000	107	146	59.9
1984	1,600	180,000	113	154	48.5
1985	1,700	181,000	106	102	56.3
1986	1,700	190,000	112	126	59.9
1987	1,480	193,000	130	132	41.7
1988	1,140	150,000	132	153	39.9
1989	855	143,500	168	120	49.0
1990	840	152,000	181	153	58.2
1991	830	147,000	177	143	57.8
1992	800	148,000	185	156	58.9
1993	761	148,000	194	160	68.5
1994	750	159,000	212	195	68.2
1995	750	175,000	233	122	83.3
1996	750	175,000	233	116	125.3
1997	725	175,000	241	135	110.2
1998	730	205,000	281	187	88.7
1999*	725	205,000	283	121	81.3

Source: Agriculture Statistics Yearbook, Statistics and Data Unit, Alberta Agriculture, Food and Rural Development, 1971 to 1999, Edmonton, Alberta

* Preliminary

Figure 1: Number of Colonies in Alberta, 1970-1999

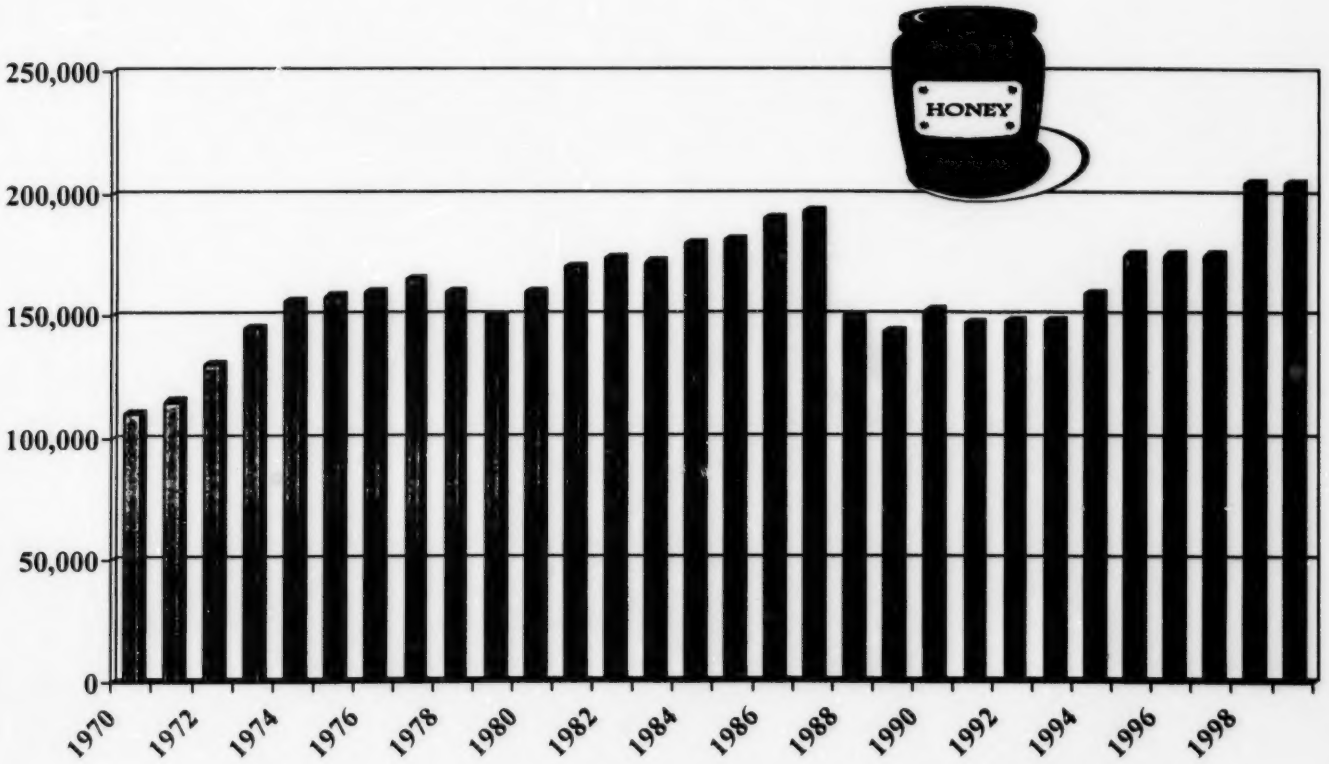


Figure 2: Production Per Colony in Alberta, 1970-1999 (lbs)

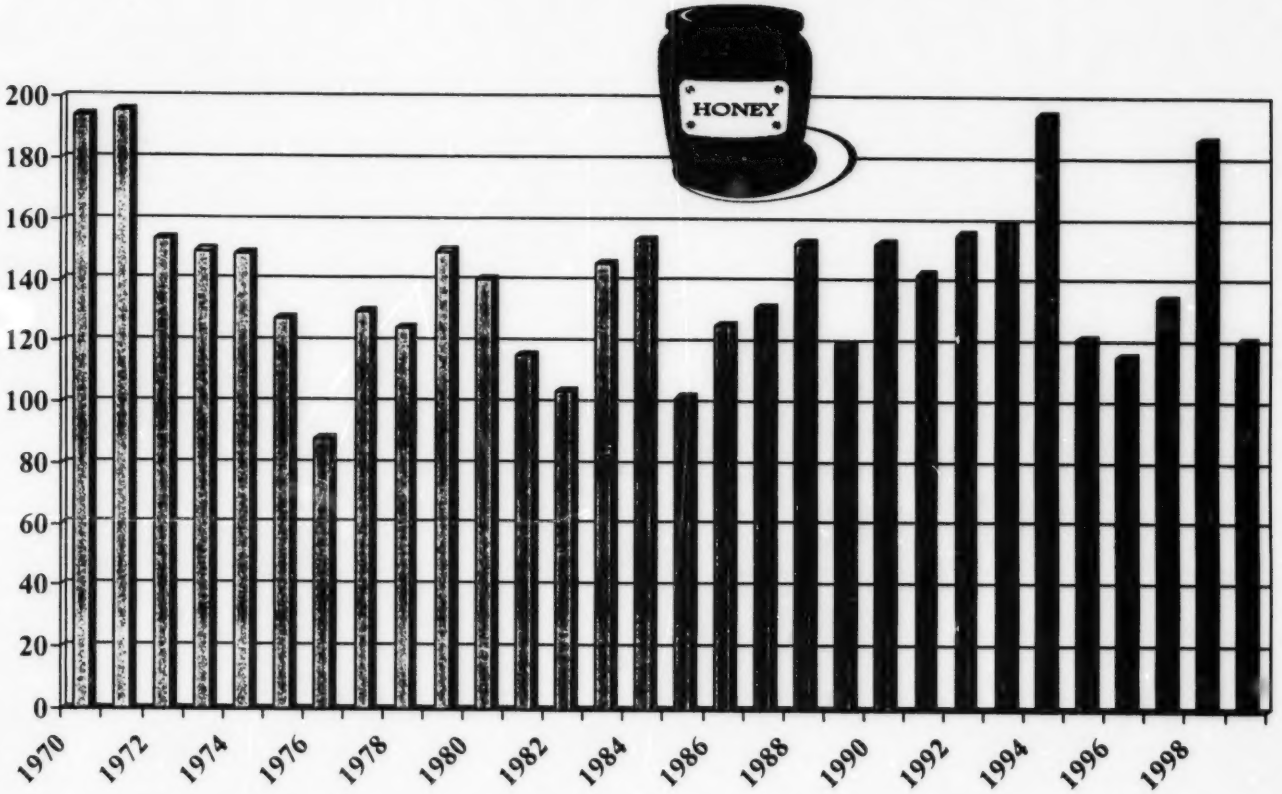
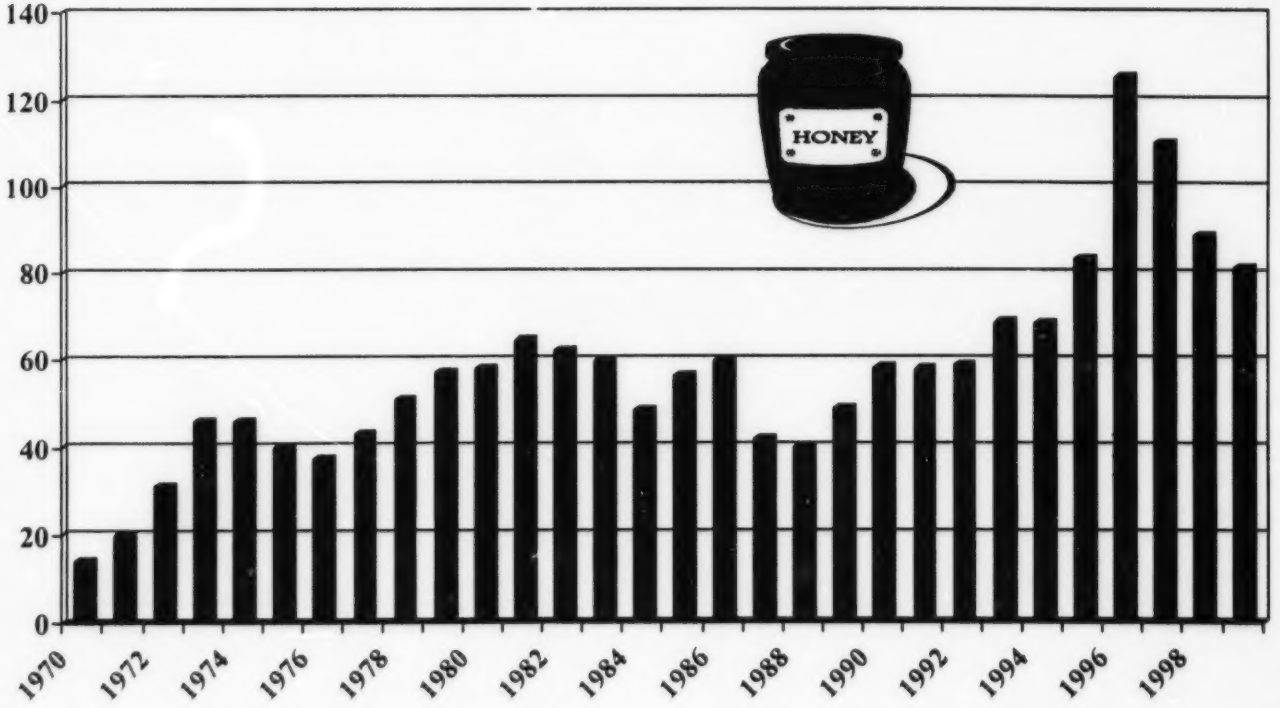


Figure 3: Honey Price per Pound in Alberta, 1970-1999



Total Value of Honey:

Total value of honey is based on:

- Bulk honey sales;
- Bulk honey inventory;
- Consumer pack sales;
- Consumer pack inventory; and
- Other honey sales.

Total Value of Production:

In addition to total value of honey, total value of production includes:

- Wax sales;
- Pollen sales;
- Crop insurance receipts;
- Miscellaneous income (any program payments);
- Less honey purchase of resale: and
- Hive rental - pollination.

The study participants were asked to provide actual sales and an estimate of expected price for any honey held in inventory and/or any other stock.

Variable Costs:

Most of the inputs used in honey production were purchased during the production year and recorded as such in the year-end statement. The study participants were asked to provide estimates for those costs for which actual records were not available, i.e., an inventory carried from last year. In 1999, the average hourly wage for hired labour was calculated at $10.50 per hour and/or the actual wage reported by the study participant. Operating interest was the actual amount paid by the study participant. Operator's and family labour (unpaid labour) were valued at $10.50 and $7.50 per hour, respectively. The study participants were asked to provide estimates of hours spent on the honey operation by their family member(s) and themselves.

Capital Costs:

Capital costs include land rent/lease, building rent and forage access, bee equipment, and vehicles, etc. Capital interest was the actual amount paid by the study participants for capital purchases.

Cash Costs:

Cash costs represent out-of-pocket costs incurred during the production period and marketing of honey. It does not include costs associated with operator's and family labour and depreciation for buildings and equipment.

Total Production Costs:

Total production costs comprise of variable costs (B) and capital costs (C).

Management Indicators:

Management indicators presented at the bottom of various tables show gross margin (total value of production less cash costs), return to unpaid labour, investment and equity. These indicators provide profit margins and economic viability of honey production at the provincial level; by regions and size of operations.

SECTION III

HONEY PRODUCTION COSTS AND RETURNS IN ALBERTA

The results in Table 2 are based on data provided by 16 beekeepers across the province. In 1999, honey produced for sale by an average study participant was 171,316 pounds, of which 92,155 pounds (54%) were sold as bulk honey. Bulk honey inventory for the 1999 honey crop was 19,960 pounds (12%) at the time of data collection. Consumer pack sales and consumer pack inventory were 2,436 and 56,221 pounds, respectively. Other honey sales amounted to only 544 pounds per beekeeper in 1999. Average yield per hive for the 16 study participants was estimated at 148 pounds. Average number of hives per study participants was 1,154. Average honey production per hive was about 22 percent higher for this group of beekeepers compared to the provincial average of 121 pounds. Details on honey, wax and pollen sales and other income are given in Table 2.

Total value of honey sold by an average study participant (bulk sales, inventory, consumer pack sales, consumer pack inventory, and other honey sales) amounted to $130,160 in 1999. Average value per hive for 1,154 hives was $113 or $0.76 per pound. When wax/pollen/other sales; crop insurance receipts, miscellaneous receipts were included to the value of honey, then total value of production increased to $135,952 or $118 per hive ($0.79 per pound of honey produced) in 1999. Honey prices in 1999 decreased by almost 15 percent over the 1998 prices.

Variable Costs:

Variable costs include all out-of-pocket costs and unpaid labour which amounted to $102,761 per average study participant in 1999. In terms of variable costs per hive, average amount was $89 per hive ($0.60 per pound) Because of the producers' interest in knowing their variable costs for each basic unit of production, these costs were broken into as much detail as possible. The most significant inputs which made up major portions of variable costs were un-paid labour followed by paid labour and benefits, bee expenses (sugar, bee purchase, medicine, icing sugar), supplies and miscellaneous expenses (beehive parts, drums, containers, advertising,

Table 2 **Honey Production Costs and Returns, Alberta 1999**

			Total $	$/Hive	$/Lb.
(A)					
1. Bulk Honey Sales	92154.75	lbs	70,971.22	61.48	.41
2. Bulk Honey Inventory	19960.38	lbs	14,996.65	12.99	
3. Consumer Pack Sales	2435.75	lbs	3,926.30	3.40	
4. Consumer Pack Inventory	56221.13	lbs	39,872.04	34.54	
5. Other Honey Sales	544.25	lbs	393.97	.34	
6. Wax/Pollen/Other Sales	2288.25	lbs	4,939.39	4.28	
7. Crop Insurance Receipts			682.88	.59	
8. Miscellaneous Receipts			122.31	.11	
9. Less: Honey Purchase for Resale			46.88	.04	
VALUE OF PRODUCTION			**135,951.64**	**117.77**	**.79**
(B)					
1. Bee Purchases - Package Bees			6,829.44	5.92	
2. Bee Purchases - Queens			3,449.95	2.99	
3. Freight & Trucking			917.23	.79	
4. Feed - Sugar			12,196.36	10.57	
5. Medicinal Sugar/Bee Repellent			4,068.43	3.52	
6. Product & Crop Insurance			356.19	.31	
7. Fuel			3,768.13	3.26	
8. Repairs - Machine			6,325.66	5.48	
9. Repairs - Buildings & Improvements			3,149.88	2.73	
10. Utilities & Heating Fuel			3,294.21	2.85	
11. Custom Work & Machine Rental			2,557.00	2.22	
12. Assoc. Dues, Prof'l Fees, Promotion & Travel			2,914.47	2.52	
13. Small Tools, Supplies & Miscellaneous Expenses			10,131.48	8.78	
14. Operating Interest			2,033.56	1.76	
15. Paid Labour & Benefits	1892.31	hours	19,660.74	17.03	
16. Unpaid Labour	2010.32	hours	21,108.38	18.29	
VARIABLE COSTS			**102,761.11**	**89.02**	**.60**
(C)					
1. Land Rent / Lease, Bldg. Rent & Forage Access			836.57	.72	
2. Taxes, Licences & General Insurance			5,041.96	4.37	
3. Equipment & Building a) Depreciation			35,315.46	30.59	
b) Lease Payments			27.41	.02	
4. Paid Capital Interest			4,858.48	4.21	
TOTAL CAPITAL COSTS			**46,079.88**	**39.92**	**.27**
(D) **CASH COSTS**	(B+C-B16-C3a)		**92,417.15**	**80.06**	**.54**
(E) **TOTAL PRODUCTION COSTS**	(B+C)		**148,840.99**	**128.94**	**.87**
(F) **GROSS MARGIN**	(A-D)		**43,534.49**	**37.71**	**.25**
RETURN TO UNPAID LABOUR	(A-E+B16)		**8,219.02**	**7.12**	**.05**
RETURN TO INVESTMENT	(A-E+C4)	-2.1 %	**(8,030.88)**	**(6.96)**	**(.05)**
RETURN TO EQUITY	(A-E)		**(12,889.36)**	**(11.17)**	**(.08)**

MANAGEMENT

Number of Hives	1,154.38
Average Yield per Hive (Lbs.)	148.41
Honey Produced (Lbs.)	171,316.25

insurance and operating supplies), fuel and building/equipment repairs and maintenance.

The study participants were asked to estimate time spent by their family members and themselves in regards to the honey operation. The time spent by the operator was valued at $10.50 per hour and $7.50 per hour for a family member(s).

Capital Costs:

Capital costs (C) are comprised of land rent/lease, building rent and forage access, depreciation for buildings, bee equipment and vehicles, lease payments and capital interest paid. Average total capital cost amounted to $46,080 or $40 per hive ($0.27 per pound of honey produced) per study participant in 1999.

Cash Costs:

Cash costs (D) include all out of pocket costs incurred during the honey production period. These costs amounted to $92,417 per average beekeeper in the study for the 1999 honey production. In terms of average cash costs per hive, the amount was $80 or $0.54 per pound of honey produced.

Total Production Costs:

Average total production cost in 1999 was estimated at $148,841 for an average honey operation with 1,154 hives. Average production cost per hive or per pound of honey produced was $129 or $0.87, respectively. Details on total production cost for an average study participant are presented in Table 2.

Management Indicators:

When cash costs (D) were deducted from the total value of honey production (A-D), average study participant showed a positive gross margin of $43,534 per beekeeping operation. Gross margin per hive was $37.71 and $0.25 per pound of honey produced.

Average return to unpaid labour in 1999 was estimated at $8,219 per study participant. In terms of return to unpaid labour per hive, it amounted to $7.12 or $0.05 per pound of honey produced per beekeeping operation in 1999.

Average return to investment and equity were negative at $8,031 and $12,889, respectively. Return to investment and equity per hive were negative at $7 ($0.05 per pound) and $11 ($0.08 per pound) per average beekeeper in 1999.

Investment Costs:

Investment costs were divided into four categories, namely land, buildings, bee equipment (including machinery), and vehicles. The study participants were asked to provide market value of land, buildings, bee equipment, machinery and vehicles to estimate total investment and depreciation for an average beekeeping operation. Actual interest paid on capital was used to arrive at total capital cost which also included depreciation for buildings, bee equipment, and vehicles.

For the study sample, land associated with the beekeeping operation was about 42 acres, valued at $16,241 or $14 per hive. Building investment per study participant was estimated at $69,049 or $60 per hive. Bee equipment investment was $250,936 per average operation or $217 per hive. Machinery (automotive) investment was based on the percentage use of vehicles for the honey operation. This investment was estimated at $52,435 or $45 per hive in 1999. When all of the investment items were added together, total investment amounted to $338,661 per average beekeeping operation or $337 per hive. Details on land, buildings, bee equipment and machinery investment are presented in Table 3.

Table 3 **Honey Production Enterprise Investment, Alberta 1999**

INVESTMENT SUMMARY:		Total $	$/Hive
Land	42.32 acres	16,241.25	14.07
Buildings		69,048.98	59.82
Bee Equipment		250,936.50	217.38
Machinery		52,434.66	45.42
TOTAL INVESTMENT		**388,661.39**	**336.69**

INVESTMENT DETAIL:	Enterprise Value ($)	Age (Years)	Depreciation ($)
Land	**16,241.25**		
Honey House	48,849.13	10.81	2,442.46
Wintering Shed	1,500.00	.13	75.00
Houses(25%)	4,972.11	14.98	248.61
Other Bldgs	13,727.75	10.76	686.39
Buildings Sub-Total	**69,048.98**		**3,452.45**
Hives	183,882.25	13.00	21,146.46
Pallets	5,248.31	7.06	603.56
Fork Lift	2,968.75	2.25	237.50
Hive Feeders	2,430.63	8.94	279.52
Super Elevator	0.00	0.00	0.00
Uncapping Machines	5,671.88	13.31	453.75
Honey Extractor	7,631.25	13.63	610.50
Dryer/Heat Exchanger	660.31	2.38	52.82
Wax Spinner/Separator	2,337.50	10.19	187.00
Honey Tank & Pipe	3,928.13	11.36	451.73
Feed Tank	2,221.88	7.14	255.52
Storage Vessel	0.00	0.00	0.00
Boiler Furnace	1,103.13	8.25	88.25
Water System	0.00	0.00	0.00
Compressor	420.00	4.25	33.60
Pressure Washer	626.94	3.75	50.16
Fuel Tank	0.00	0.00	0.00
Scales	944.69	9.50	108.64
Barrels	955.44	1.19	109.88
Barrel Loader	0.00	0.00	0.00
Carts	838.13	9.64	96.38
Fencers / Shockers	566.13	5.32	65.10
Shop Tools	4,828.13	5.19	555.23
Staplers	555.56	2.56	63.89
Office Equipment	521.19	.94	41.69
Lawn Mower	1,266.25	4.81	101.30
Over-Wintering Insulation	5,251.00	4.25	603.87
Miscellaneous Equipment	16,079.06	7.77	1,421.94
Equipment Sub - Total	**250,936.50**		**27,618.29**
Trucks	36,407.50	11.66	2,912.60
Tractors	1,812.50	3.88	145.00
Other Mach.	14,214.66	5.89	965.52
Power Equipment Sub - Total	**52,434.66**		**4,023.12**
TOTAL INVESTMENT	**388,661.39**		**35,093.86**

SECTION IV

HONEY PRODUCTION COSTS AND RETURNS BY REGIONS

The study sample of 16 beekeepers was divided into three groups by regions, i.e., Southern, Central and Northeast regions (Group I); Northwest (Group II); and Peace (Group III). As the number of beekeepers participating in the study for regions 1 to 3 was small, these were combined into one group to preserve confidentiality of the data. Therefore, the number of beekeepers in Group I was seven (7). Group II, the Northwest region, had six (6) beekeepers and Group III, the Peace region, had three (3). Figure 4 shows the distribution of the study sample by region.

Group I (Southern, Central and Northeast Regions):

Results presented in Table 4 are based on the averages for seven study participants. Average size of the beekeeping operation was 698 hives. Yield per hive for this group was about 198 pounds, highest compared to other two groups. Average honey production for this group was 138,515 pounds of marketable honey. Total value of production including wax/pollen and miscellaneous receipts for this group amounted to $112,165 per average beekeeper or $161 per hive ($0.81 per pound).

Average variable costs for Group I participants were estimated at $82,865 per study participant and $119 per hive or $0.60 per pound of honey produced. Average capital costs for Group I participants amounted to $34,908 per operation, or $50 per hive ($0.25 per pound). Average total production cost for study participants in the Southern, Central and North East regions was estimated at $117,773 per beekeeping operation and $169 per hive or $0.85 per pound of honey produced in 1999.

Details on total value of production, variable costs, capital costs, cash costs and total production cost for Group I participants are given in Table 4. Average total investment for land, buildings, bee equipment, and machinery for this group of honey producers is presented in Table 5. Average total investment for honey producers in this group amounted to $249,408 per operation or $357 per hive for the 1999 honey production year.

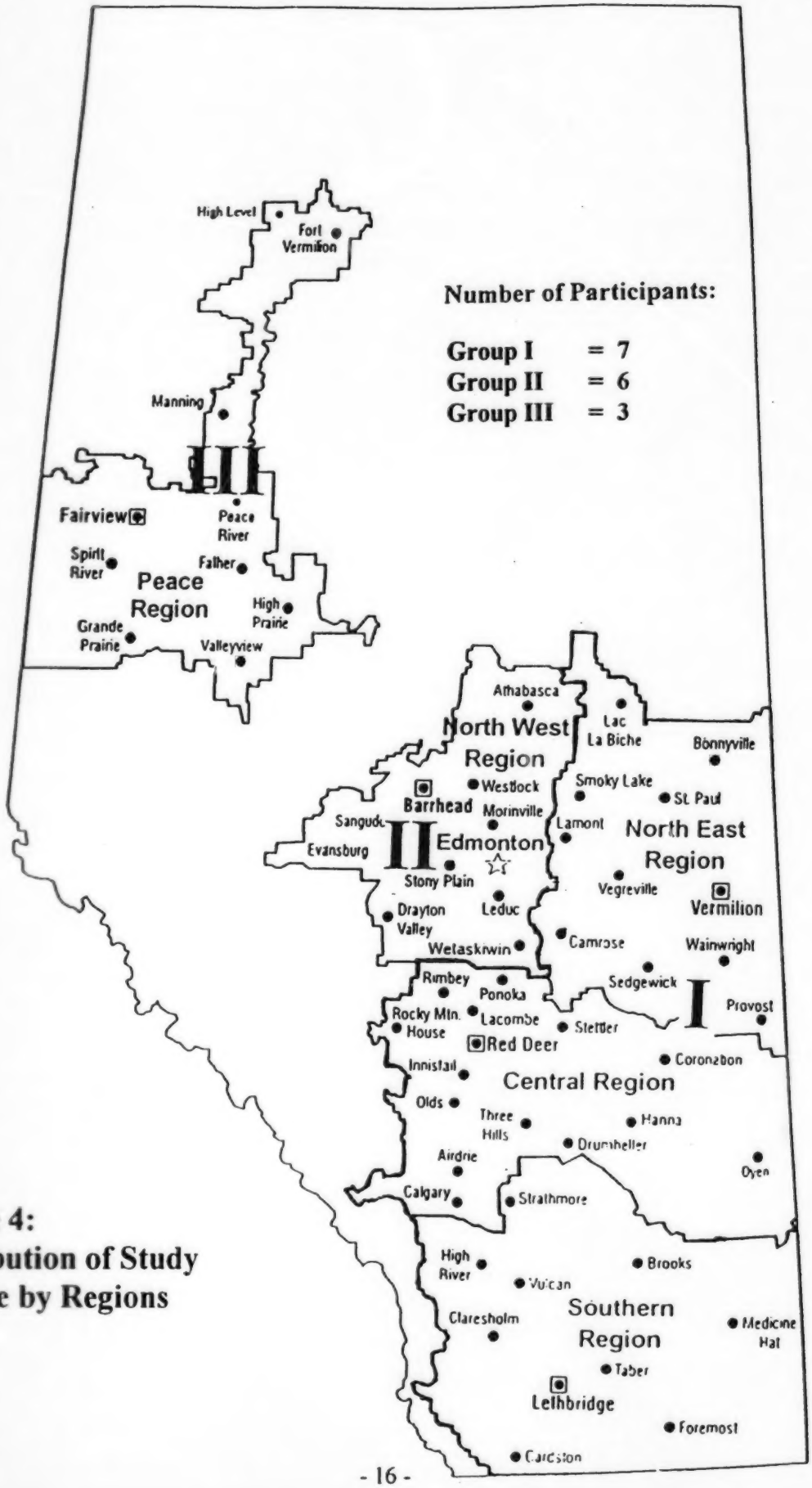


Figure 4:
Distribution of Study Sample by Regions

Table 4 **Honey Production Costs and Returns, Southern, Central and NE Regions 1999**

			Total $	$/Hive	$/Lb.
(A)					
1. Bulk Honey Sales	94775.00	lbs	70,094.70	100.45	.51
2. Bulk Honey Inventory	10416.67	lbs	7,560.50	10.83	
3. Consumer Pack Sales	6195.33	lbs	10,038.47	14.39	
4. Consumer Pack Inventory	26294.67	lbs	18,941.40	27.14	
5. Other Honey Sales	833.00	lbs	624.75	.90	
6. Wax/Pollen/Other Sales	1173.67	lbs	2,959.48	4.24	
7. Crop Insurance Receipts			1,821.00	2.61	
8. Miscellaneous Receipts			0.00	0.00	
9. Less: Honey Purchase for Resale			125.00	.18	
VALUE OF PRODUCTION			**112,165.30**	**160.73**	**.81**
(B)					
1. Bee Purchases - Package Bees			5,683.33	8.14	
2. Bee Purchases - Queens			3,597.08	5.15	
3. Freight & Trucking			1,217.62	1.74	
4. Feed - Sugar			8,786.38	12.59	
5. Medicinal Sugar/Bee Repellent			2,113.01	3.03	
6. Product & Crop Insurance			540.83	.78	
7. Fuel			3,286.43	4.71	
8. Repairs - Machine			9,898.86	14.19	
9. Repairs - Buildings & Improvements			2,635.97	3.78	
10. Utilities & Heating Fuel			2,450.16	3.51	
11. Custom Work & Machine Rental			3,011.00	4.31	
12. Assoc. Dues, Prof'l Fees, Promotion & Travel			1,312.63	1.88	
13. Small Tools, Supplies & Miscellaneous Expenses			8,169.85	11.71	
14. Operating Interest			728.17	1.04	
15. Paid Labour & Benefits	1087.67	hours	12,592.05	18.04	
16. Unpaid Labour	1604.00	hours	16,842.00	24.13	
VARIABLE COSTS			**82,865.37**	**118.75**	**.60**
(C)					
1. Land Rent / Lease, Bldg. Rent & Forage Access			390.52	.56	
2. Taxes, Licences & General Insurance			3,973.87	5.69	
3. Equipment & Building a) Depreciation			22,992.70	32.95	
b) Lease Payments			73.09	.10	
4. Paid Capital Interest			7,477.50	10.72	
TOTAL CAPITAL COSTS			**34,907.68**	**50.02**	**.25**
(D) CASH COSTS (B+C-B16-C3a)			**77,938.35**	**111.69**	**.56**
(E) TOTAL PRODUCTION COSTS (B+C)			**117,773.05**	**168.77**	**.85**
(F) GROSS MARGIN (A-D)			**34,226.95**	**49.05**	**.25**
RETURN TO UNPAID LABOUR (A-E+B16)			**11,234.25**	**16.10**	**.08**
RETURN TO INVESTMENT (A-E+C4)		.7 %	**1,869.75**	**2.68**	**.01**
RETURN TO EQUITY (A-E)			**(5,607.75)**	**(8.04)**	**(.04)**

MANAGEMENT

Number of Hives	697.83
Average Yield per Hive (Lbs.)	198.49
Honey Produced (Lbs.)	138,514.67

Table 5 **Honey Production Enterprise Investment, Southern, Central and NE Regions 1999**

INVESTMENT SUMMARY:		Total $	$/Hive
Land	14.67 acres	8,035.83	11.52
Buildings		38,855.42	55.68
Bee Equipment		167,003.00	239.32
Machinery		35,514.09	50.89
TOTAL INVESTMENT		**249,408.34**	**357.40**

INVESTMENT DETAIL:	Enterprise Value ($)	Age (Years)	Depreciation ($)
Land	**8,035.83**		
Honey House	22,416.67	9.83	1,120.83
Wintering Shed	0.00	0.00	0.00
Houses(25%)	3,322.92	16.79	166.15
Other Bldgs	13,115.83	8.27	655.79
Buildings Sub-Total	**38,855.42**		**1,942.77**
Hives	115,324.17	10.67	13,262.28
Pallets	1,003.83	8.33	115.44
Fork Lift	0.00	0.00	0.00
Hive Feeders	3,375.00	8.00	388.13
Super Elevator	0.00	0.00	0.00
Uncapping Machines	4,000.00	11.83	320.00
Honey Extractor	5,383.33	14.67	430.67
Dryer/Heat Exchanger	750.00	2.50	60.00
Wax Spinner/Separator	1,400.00	13.17	112.00
Honey Tank & Pipe	3,583.33	12.67	412.08
Feed Tank	1,950.00	4.88	224.25
Storage Vessel	0.00	0.00	0.00
Boiler Furnace	1,091.67	3.67	87.33
Water System	0.00	0.00	0.00
Compressor	566.67	3.33	45.33
Pressure Washer	272.67	1.50	21.81
Fuel Tank	0.00	0.00	0.00
Scales	765.00	12.33	87.97
Barrels	620.00	2.33	71.30
Barrel Loader	0.00	0.00	0.00
Carts	958.33	7.83	110.21
Fencers / Shockers	241.67	2.00	27.79
Shop Tools	4,908.33	7.83	564.46
Staplers	325.00	3.17	37.38
Office Equipment	307.33	.33	24.59
Lawn Mower	1,776.67	3.83	142.13
Over-Wintering Insulation	4,258.33	4.17	489.71
Miscellaneous Equipment	14,141.67	5.72	1,209.21
Equipment Sub - Total	**167,003.00**		**18,244.07**
Trucks	28,834.17	10.58	2,306.73
Tractors	0.00	0.00	0.00
Other Mach.	6,679.92	2.78	461.73
Power Equipment Sub - Total	**35,514.09**		**2,768.46**
TOTAL INVESTMENT	**249,408.34**		**22,955.30**

Group II (North-West Region):

Information presented in Table 6 is based on the averages of six (6) study participants. On an average, the number of hives for this group was 1,731 with average yield being 131 pounds per hive. Amount of honey produced by an average participant in Group II was 226,812 pounds in 1999.

Average total value of production for this group was $180,574 per operation and $104 per hive or $0.80 per pound of honey produced. Variable costs for Group II participants in the North-West region amounted $129,546 per operation and $75 per hive or $0.57 per pound. When capital costs were added to variable costs, average total production cost was $109 per hive or $0.83 per pound of honey produced. Average return to investment was negative by $3 per hive for this group. Average return to equity was also negative at $4 per hive. Details on costs and returns for Group II study participants are shown in Table 6.

Average total investment for land, buildings, bee equipment, and machinery (vehicles) for Group II study participants (North-West region) amounted to $511,758 per operation or $296 per hive. Details on investment and investment costs for this group are presented in Table 7.

Group III (Peace River Region):

Three (3) honey producers provided detailed information on their operations from the Peace River region. Group averages for these study participants resulted in 722 hives per operation. Average yield for producers in the Peace region was 149 pounds per hive, lowest among the three groups. Average total value of honey for Group III participants amounted to $77,678 per beekeeping operation or $108 per hive ($.073 per pound). When income from honey by-products was combined with the value of honey, average total value of production was estimated at $79,405 per operation or $110 per hive ($0.74 per pound).

Average variable costs for the five honey producers in the Peace Region amounted to $104 per hive ($0.70 per pound). Total production cost (cash costs, operator and family labour and capital costs) was almost $159 per hive or $1.07 per pound of honey produced in 1999. Average gross margin (total value of production less cash costs) was $13,702 per operation or $19 per hive. Honey operations in the Peace Region reported in highest labour costs among the three groups.

Table 6 **Honey Production Costs and Returns, North West Region 1999**

			Total $	$/Hive	$/Lb.
(A)					
1. Bulk Honey Sales	115696.57	lbs	91,273.39	52.72	.40
2. Bulk Honey Inventory	22527.14	lbs	18,021.71	10.41	
3. Consumer Pack Sales	64.29	lbs	77.14	.04	
4. Consumer Pack Inventory	88381.43	lbs	62,544.19	36.13	
5. Other Honey Sales	142.86	lbs	171.43	.10	
6. Wax/Pollen/Other Sales	3950.14	lbs	8,206.55	4.74	
7. Crop Insurance Receipts			0.00	0.00	
8. Miscellaneous Receipts			279.57	.16	
9. Less: Honey Purchase for Resale			0.00	0.00	
VALUE OF PRODUCTION			**180,573.99**	**104.31**	**.80**
(B)					
1. Bee Purchases - Package Bees			10,738.71	6.20	
2. Bee Purchases - Queens			4,031.38	2.33	
3. Freight & Trucking			672.71	.39	
4. Feed - Sugar			16,483.79	9.52	
5. Medicinal Sugar/Bee Repellent			6,481.99	3.74	
6. Product & Crop Insurance			336.43	.19	
7. Fuel			3,957.43	2.29	
8. Repairs - Machine			5,007.43	2.89	
9. Repairs - Buildings & Improvements			3,673.73	2.12	
10. Utilities & Heating Fuel			3,421.36	1.98	
11. Custom Work & Machine Rental			2,886.00	1.67	
12. Assoc. Dues, Prof'l Fees, Promotion & Travel			3,578.14	2.07	
13. Small Tools, Supplies & Miscellaneous Expenses			13,141.36	7.59	
14. Operating Interest			3,000.29	1.73	
15. Paid Labour & Benefits	2710.71	hours	28,265.80	16.33	
16. Unpaid Labour	2273.31	hours	23,869.72	13.79	
VARIABLE COSTS			**129,546.27**	**74.83**	**.57**
(C)					
1. Land Rent / Lease, Bldg. Rent & Forage Access			1,321.29	.76	
2. Taxes, Licences & General Insurance			6,413.39	3.70	
3. Equipment & Building a) Depreciation			47,859.30	27.65	
b) Lease Payments			0.00	0.00	
4. Paid Capital Interest			2,864.86	1.65	
TOTAL CAPITAL COSTS			**58,458.83**	**33.77**	**.26**
(D) **CASH COSTS**	(B+C-B16-C3a)		**116,276.08**	**67.17**	**.51**
(E) **TOTAL PRODUCTION COSTS**	(B+C)		188,005.10	108.60	.83
(F) **GROSS MARGIN**	(A-D)		64,297.90	37.14	.28
RETURN TO UNPAID LABOUR	(A-E+B16)		16,438.61	9.50	.07
RETURN TO INVESTMENT	(A-E+C4)	-.9 %	(4,566.26)	(2.64)	(.02)
RETURN TO EQUITY	(A-E)		(7,431.12)	(4.29)	(.03)

MANAGEMENT

Number of Hives	1,731.14
Average Yield per Hive (Lbs.)	131.02
Honey Produced (Lbs.)	226,812.29

Table 7 **Honey Production Enterprise Investment, North West Region 1999**

INVESTMENT SUMMARY:		Total $	$/Hive
Land	37.01 acres	13,127.86	7.58
Buildings		87,018.32	50.27
Bee Equipment		338,800.14	195.71
Machinery		72,811.43	42.06
TOTAL INVESTMENT		**511,757.75**	**295.62**

INVESTMENT DETAIL:	Enterprise Value ($)	Age (Years)	Depreciation ($)
Land	**13,127.86**		
Honey House	71,474.57	9.14	3,573.73
Wintering Shed	0.00	0.00	0.00
Houses(25%)	7,143.75	11.14	357.19
Other Bldgs	8,400.00	11.20	420.00
Buildings Sub-Total	**87,018.32**		**4,350.92**
Hives	262,810.14	8.29	30,223.17
Pallets	9,292.86	3.57	1,068.68
Fork Lift	714.29	5.14	57.14
Hive Feeders	1,062.86	7.00	122.23
Super Elevator	0.00	0.00	0.00
Uncapping Machines	8,285.71	15.00	662.86
Honey Extractor	9,585.71	15.00	766.86
Dryer/Heat Exchanger	866.43	3.29	69.31
Wax Spinner/Separator	3,142.86	5.29	251.43
Honey Tank & Pipe	3,514.29	10.25	404.14
Feed Tank	2,478.57	6.57	285.04
Storage Vessel	0.00	0.00	0.00
Boiler Furnace	1,157.14	9.43	92.57
Water System	0.00	0.00	0.00
Compressor	340.00	4.43	27.20
Pressure Washer	1,042.86	4.57	83.43
Fuel Tank	0.00	0.00	0.00
Scales	1,377.86	5.57	158.45
Barrels	953.14	.29	109.61
Barrel Loader	0.00	0.00	0.00
Carts	842.86	9.04	96.93
Fencers / Shockers	745.14	4.30	85.69
Shop Tools	3,257.14	1.71	374.57
Staplers	644.29	2.86	74.09
Office Equipment	585.00	.14	46.80
Lawn Mower	585.71	4.86	46.86
Over-Wintering Insulation	8,138.00	4.57	935.87
Miscellaneous Equipment	17,377.29	7.26	1,524.39
Equipment Sub - Total	**338,800.14**		**37,567.32**
Trucks	49,942.86	11.14	3,995.43
Tractors	1,428.57	1.57	114.29
Other Mach.	21,440.00	6.43	1,449.71
Power Equipment Sub - Total	**72,811.43**		**5,559.43**
TOTAL INVESTMENT	**511,757.75**		**47,477.66**

Return over investment and equity were negative by $43 and $48 per hive, respectively. Details on value of production, cash costs, operator and family labour costs, capital costs and management indicators are shown in Table 8.

Investment for land, buildings, bee equipment, machinery and vehicles for the three (3) study participants in the Peace River region amounted to $345,359 per beekeeping operation in 1999. Investment per hive for an average beekeeping operation in this region (Group III) was $479. This group of honey producers also reported highest investment per hive. Details on land, buildings, bee equipment and machinery investments for the beekeepers in the Peace River region are presented in Table 9.

Table 8 **Honey Production Costs and Returns, Peace Region 1999**

			Total $	$/Hive	$/Lb.
(A)					
1. Bulk Honey Sales	31983.33	lbs	25,352.50	35.13	.24
2. Bulk Honey Inventory	33058.67	lbs	22,810.48	31.61	
3. Consumer Pack Sales	450.00	lbs	683.33	.95	
4. Consumer Pack Inventory	41033.33	lbs	28,831.67	39.95	
5. Other Honey Sales	903.33	lbs	451.67	.63	
6. Wax/Pollen/Other Sales	639.67	lbs	1,275.85	1.77	
7. Crop Insurance Receipts			0.00	0.00	
8. Miscellaneous Receipts			0.00	0.00	
9. Less: Honey Purchase for Resale			0.00	0.00	
VALUE OF PRODUCTION			**79,405.50**	**110.03**	**.74**
(B)					
1. Bee Purchases - Package Bees			0.00	0.00	
2. Bee Purchases - Queens			1,799.00	2.49	
3. Freight & Trucking			887.00	1.23	
4. Feed - Sugar			9,012.33	12.49	
5. Medicinal Sugar/Bee Repellent			2,347.67	3.25	
6. Product & Crop Insurance			33.00	.05	
7. Fuel			4,289.81	5.94	
8. Repairs - Machine			2,255.16	3.12	
9. Repairs - Buildings & Improvements			2,955.37	4.10	
10. Utilities & Heating Fuel			4,685.62	6.49	
11. Custom Work & Machine Rental			881.33	1.22	
12. Assoc. Dues, Profl Fees, Promotion & Travel			4,569.60	6.33	
13. Small Tools, Supplies & Miscellaneous Expenses			7,031.72	9.74	
14. Operating Interest			2,388.63	3.31	
15. Paid Labour & Benefits	1592.00	hours	13,719.67	19.01	
16. Unpaid Labour	1722.67	hours	18,088.00	25.06	
VARIABLE COSTS			**74,943.90**	**103.85**	**.70**
(C)					
1. Land Rent / Lease, Bldg. Rent & Forage Access			597.67	.83	
2. Taxes, Licences & General Insurance			3,978.13	5.51	
3. Equipment & Building a) Depreciation			30,692.05	42.53	
b) Lease Payments			0.00	0.00	
4. Paid Capital Interest			4,272.21	5.92	
TOTAL CAPITAL COSTS			**39,540.06**	**54.79**	**.37**
(D) **CASH COSTS**	(B+C-B16-C3a)		**65,703.92**	**91.04**	**.61**
(E) **TOTAL PRODUCTION COSTS**	(B+C)		**114,483.97**	**158.64**	**1.07**
(F) **GROSS MARGIN**	(A-D)		**13,701.58**	**18.99**	**.13**
RETURN TO UNPAID LABOUR	(A-E+B16)		**(16,990.47)**	**(23.54)**	**(.16)**
RETURN TO INVESTMENT	(A-E+C4)	-8.9 %	**(30,806.26)**	**(42.69)**	**(.29)**
RETURN TO EQUITY	(A-E)		**(35,078.47)**	**(48.61)**	**(.33)**

MANAGEMENT

Number of Hives	721.67
Average Yield per Hive (Lbs.)	148.86
Honey Produced (Lbs.)	107,428.67

Table 9 **Honey Production Enterprise Investment, Peace Region 1999**

INVESTMENT SUMMARY:		Total $	$/Hive
Land	8.33 acres	5,333.33	7.39
Buildings		87,507.67	121.26
Bee Equipment		213,788.33	296.24
Machinery		38,730.00	53.67
TOTAL INVESTMENT		**345,359.33**	**478.56**

INVESTMENT DETAIL:	Enterprise Value ($)	Age (Years)	Depreciation ($)
Land	**5,333.33**		
Honey House	48,921.33	16.67	2,446.07
Wintering Shed	8,000.00	.67	400.00
Houses(25%)	3,203.33	20.33	160.17
Other Bldgs	27,383.00	14.73	1,369.15
Buildings Sub-Total	**87,507.67**		**4,375.38**
Hives	136,833.33	28.67	15,735.83
Pallets	4,300.00	12.67	494.50
Fork Lift	14,166.67	0.00	1,133.33
Hive Feeders	3,733.33	15.33	429.33
Super Elevator	0.00	0.00	0.00
Uncapping Machines	2,916.67	12.33	233.33
Honey Extractor	7,566.67	8.33	605.33
Dryer/Heat Exchanger	0.00	0.00	0.00
Wax Spinner/Separator	2,333.33	15.67	186.67
Honey Tank & Pipe	5,583.33	11.33	642.08
Feed Tank	2,166.67	13.00	249.17
Storage Vessel	0.00	0.00	0.00
Boiler Furnace	1,000.00	14.67	80.00
Water System	0.00	0.00	0.00
Compressor	313.33	5.67	25.07
Pressure Washer	365.00	6.33	29.20
Fuel Tank	0.00	0.00	0.00
Scales	293.33	13.00	33.73
Barrels	1,631.67	1.00	187.64
Barrel Loader	0.00	0.00	0.00
Carts	586.67	14.67	67.47
Fencers / Shockers	797.33	14.33	91.69
Shop Tools	8,333.33	8.00	958.33
Staplers	809.67	.67	93.11
Office Equipment	800.00	4.00	64.00
Lawn Mower	1,833.33	6.67	146.67
Over-Wintering Insulation	500.00	3.67	57.50
Miscellaneous Equipment	16,924.67	13.07	1,608.35
Equipment Sub - Total	**213,788.33**		**23,152.35**
Trucks	19,971.67	15.02	1,597.73
Tractors	6,333.33	17.00	506.67
Other Mach.	12,425.00	10.85	843.33
Power Equipment Sub - Total	**38,730.00**		**2,947.73**
TOTAL INVESTMENT	**345,359.33**		**30,475.47**

SECTION V

HONEY PRODUCTION COSTS AND RETURNS BY SIZE OF OPERATION

The study sample of 16 beekeepers was further divided into three groups by size of operation. The main objective of analyzing data by size of operation was to study the economies of scale, i.e., whether the size of operation had any effect on net returns and overall production costs. Following are the three groups by size of operation.

Group	Size of operation	Number of Participants	Average Number of Hives per Beekeeper
IV	Up to 600 Hives	7	277
V	601 to 1,000 Hives	4	794
VI	Over 1,000 Hives	5	2,568
	TOTAL	**16**	**1,154**

Group IV (Up to 600 Hives):

Table 10 presents the results for the study participants in Group IV, i.e., up to 600 hives. The number of hives per average study participant for this group was 277. Number of hives owned by this group of participants ranged from 125 to 600 hives. In 1999, average yield for this group was 131 pounds of honey per hive, about 17 pounds per hive lower than the study sample. The value of honey (bulk honey sales, bulk honey inventory, consumer pack sales, consumer pack inventory, wax/pollen sales and other honey sales) amounted to $29,231 per operation ($106 per hive) or $0.80 per pound of honey produced.

Variable Costs:

Average variable cost for the smallest group of honey producers: i.e., under 600 hives, are presented in Table 10. These costs amounted to $101 per hive or $0.77 per pound of honey produced in 1999.

Average operator and family labour costs for this Group (IV) were about $39 per hive or $0.30 per pound of honey produced. Most of the honey producers in this group (under 600 hives) run these operations as a side businesses to supplement their income from other sources.
As mentioned above, the most significant cost for this group of beekeepers were paid labour operator and family labour at $39 per hive, followed by machine repairs, supplies and miscellaneous expenses, utilities and heating fuel.

Capital Costs:

Average land rent/lease, depreciation for buildings, bee equipment and vehicles, and capital interest paid by the seven (7) apiarists in Group IV amounted to $14,399 ($52 per hive) or $0.40 per pound of honey produced. Breakdown of capital costs is also shown in Table 10.

Total Production Costs:

Average total production costs per study participant in up to 60 hives group was estimated at $42,252 for honey operation with 277 hives. Production costs per hive and per pound of honey produced was the second highest for this group (among the three groups by size of operation) of beekeepers at $153 and $1.16, respectively.

Management Indicators:

Average return to value of production over cash costs for Group IV participants (up to 600 hives) was $18 per hive or $0.14 per pound of honey produced. Average return to unpaid labour was negative at$12 per hive or $0.09 per pound of honey produced. Return to investment and equity were also negative at $37 and $47 per hive, respectively. Details on cash, operator and family labour, capital costs, and management indicators are given in Table 10.

Table 10 **Honey Production Costs and Returns,**
Alberta By size of operation (up to 600 Hives) 1999

			Total $	$/Hive	$/Lb.
(A)					
1. Bulk Honey Sales	33495.83	lbs	24,483.03	88.39	.67
2. Bulk Honey Inventory	0.00	lbs	0.00	0.00	
3. Consumer Pack Sales	2437.00	lbs	3,325.13	12.00	
4. Consumer Pack Inventory	279.67	lbs	440.33	1.59	
5. Other Honey Sales	166.67	lbs	200.00	.72	
6. Wax/Pollen/Other Sales	466.50	lbs	782.49	2.82	
7. Crop Insurance Receipts			0.00	0.00	
8. Miscellaneous Receipts			0.00	0.00	
9. Less: Honey Purchase for Resale			0.00	0.00	
VALUE OF PRODUCTION			**29,230.99**	**105.53**	**.80**
(B)					
1. Bee Purchases - Package Bees			0.00	0.00	
2. Bee Purchases - Queens			616.25	2.22	
3. Freight & Trucking			690.95	2.49	
4. Feed - Sugar			1,427.38	5.15	
5. Medicinal Sugar/Bee Repellent			1,045.51	3.77	
6. Product & Crop Insurance			1.67	.01	
7. Fuel			1,911.84	6.90	
8. Repairs - Machine			3,176.44	11.47	
9. Repairs - Buildings & Improvements			2,114.71	7.63	
10. Utilities & Heating Fuel			2,037.63	7.36	
11. Custom Work & Machine Rental			8.17	.03	
12. Assoc. Dues, Prof'l Fees, Promotion & Travel			963.09	3.48	
13. Small Tools, Supplies & Miscellaneous Expenses			3,077.04	11.11	
14. Operating Interest			83.83	.30	
15. Paid Labour & Benefits	137.67	hours	894.55	3.23	
16. Unpaid Labour	933.67	hours	9,803.50	35.39	
VARIABLE COSTS			**27,852.57**	**100.55**	**.77**
(C)					
1. Land Rent / Lease, Bldg. Rent & Forage Access			265.18	.96	
2. Taxes, Licences & General Insurance			2,859.27	10.32	
3. Equipment & Building a) Depreciation			8,315.63	30.02	
b) Lease Payments			73.09	.26	
4. Paid Capital Interest			2,885.88	10.42	
TOTAL CAPITAL COSTS			**14,399.05**	**51.98**	**.40**
(D) CASH COSTS	**(B+C-B16-C3a)**		**24,132.49**	**87.12**	**.66**
(E) TOTAL PRODUCTION COSTS	**(B+C)**		**42,251.62**	**152.53**	**1.16**
(F) GROSS MARGIN	**(A-D)**		**5,098.50**	**18.41**	**.14**
RETURN TO UNPAID LABOUR	**(A-E+B16)**		**(3,217.13)**	**(11.61)**	**(.09)**
RETURN TO INVESTMENT	**(A-E+C4)**	-10.4 %	**(10,134.75)**	**(36.59)**	**(.28)**
RETURN TO EQUITY	**(A-E)**		**(13,020.63)**	**(47.01)**	**(.36)**

MANAGEMENT

Number of Hives	277.00
Average Yield per Hive (Lbs.)	131.33
Honey Produced (Lbs.)	36,379.17

Investment Costs:

Average total investment for honey producers in the up to 600 hives group was $97,664 per operation or $353 per hive. Bee equipment investment was estimated at $192 per hive, followed by buildings at $99, and machinery, including vehicles, at $55 per hive. Table 11 presents details on land, buildings, bee equipment, machinery and vehicles investment for Group IV in 1999.

Group V (601 to 1,000 Hives):

Average number of hives for this group (4 beekeepers) was 794 hives, with an average production of 194 pounds per hive. The number of hives owned by this group of participants ranged from 600 to 940. Section A in Table 12 presents total value of production (bulk honey sales, consumer pack sales, honey held in inventory, wax/pollen sales and miscellaneous receipts, and other honey sales), estimated at $124,143 per beekeeping operation or $156 per hive ($0.81 per pound).

Variable Costs:

Average variable costs for Group V (601 to 1,000 hives) of beekeepers were estimated at $82,745 per beekeeping operation or $104 per hive ($0.54 per pound) during the 1999 honey production year. Average operator and family labour charges were $20 per hive or $0.10 per pound of honey produced. Cash costs (D) for this group amounted to $79,659 per operation or $100 per hive or $0.52 per pound of honey produced (Table 12).

Capital Costs:

Capital costs for Group V honey producers (601 to 1,000 hives) were estimated at $41,579 per operation or $52 per hive ($0.27 per pound of honey produced). Capital interest paid by this group was about $10 per hive during the 1999 production year.

Table 11 **Honey Production Enterprise Investment, Alberta By size of operation (up to 600 Hives) 1999**

INVESTMENT SUMMARY:		Total $	$/Hive
Land	5.83 acres	1,969.17	7.11
Buildings		27,480.08	99.21
Bee Equipment		53,113.83	191.75
Machinery		15,100.59	54.51
TOTAL INVESTMENT		**97,663.68**	**352.58**

INVESTMENT DETAIL:	Enterprise Value ($)	Age (Years)	Depreciation ($)
Land	**1,969.17**		
Honey House	16,044.00	9.83	802.20
Wintering Shed	0.00	0.00	0.00
Houses(25%)	2,695.42	18.17	134.77
Other Bldgs	8,740.67	7.39	437.03
Buildings Sub-Total	**27,480.08**		**1,374.00**
Hives	29,757.50	11.50	3,422.11
Pallets	387.17	4.33	44.52
Fork Lift	833.33	6.00	66.67
Hive Feeders	1,931.67	8.17	222.14
Super Elevator	0.00	0.00	0.00
Uncapping Machines	1,291.67	17.33	103.33
Honey Extractor	2,933.33	15.33	234.67
Dryer/Heat Exchanger	83.33	.67	6.67
Wax Spinner/Separator	333.33	10.17	26.67
Honey Tank & Pipe	1,691.67	11.50	194.54
Feed Tank	1,200.00	4.83	138.00
Storage Vessel	0.00	0.00	0.00
Boiler Furnace	1,216.67	9.17	97.33
Water System	0.00	0.00	0.00
Compressor	440.00	2.00	35.20
Pressure Washer	91.67	.50	7.33
Fuel Tank	0.00	0.00	0.00
Scales	227.50	8.33	26.16
Barrels	283.33	1.67	32.58
Barrel Loader	0.00	0.00	0.00
Carts	535.00	7.17	61.53
Fencers / Shockers	532.00	3.00	61.18
Shop Tools	2,491.67	5.83	286.54
Staplers	196.50	1.67	22.60
Office Equipment	400.00	2.00	32.00
Lawn Mower	618.33	4.17	49.47
Over-Wintering Insulation	1,675.00	3.67	192.63
Miscellaneous Equipment	3,963.17	4.95	353.68
Equipment Sub - Total	**53,113.83**		**5,717.55**
Trucks	10,735.83	16.07	858.87
Tractors	0.00	0.00	0.00
Other Mach.	4,364.76	6.49	299.18
Power Equipment Sub - Total	**15,100.59**		**1,158.05**
TOTAL INVESTMENT	**97,663.68**		**8,249.60**

Total Production Costs:

Average total production costs (variable costs including operator and family, and capital costs) for honey producers in this size group, were $124, 324 per average beekeeping operation. In terms of per hive and per pound of honey produced, average production cost for this group was $157 and $0.81, respectively.

Management Indicators:

Gross margin (value of production - cash costs) for Group V participants (601 to 1,000 hives) was $56 per hive or $0.29 per pound of honey produced. Return to unpaid labour and investment were marginally positive at $19 and $9 per hive, respectively. However, return to equity was marginally negative. Details on total value production, costs and returns are given in Table 12.

Investment Costs:

Average total investment for the study participants in Group V (601 to 1,000 hives) was $313,338 per operation or $395 per hive. Land area associated with the honey operation for this group was over 7 acres, valued at $4,625 or $661 per acre ($6 per hive). Market value for buildings was estimated at $62,540 per average honey operation or $79 per hive in Group V (Table 13). Bee equipment investment for this group was estimated at $208,738 per operation or $263 per hive. Average investment for vehicles was $37,4335 per operation or $47 per hive. Details on land, buildings, bee equipment, and machinery (vehicles) investment are presented in Table 13.

Group VI (over 1,000 Hives):

Over 44 percent of the honey produced by this group was sold as bulk honey and the remainder was held in inventory. Total value for Group VI participants (over 1,000 hives) was $263,658 or $103 per hive. Average value per pound of honey produced was $0.75 for this group. When receipts from wax/pollen, other sales crop insurance and miscellaneous sales were included with value of honey, total value of production increased to $275,825 or $107 per hive ($0.79 per pound). The size of beekeeping operations for participants in this group ranged from

Table 12 **Honey Production Costs and Returns,**
Alberta By size of operation (600 - 1000 Hives) 1999

			Total $	$/Hive	$/Lb.
(A)					
1. Bulk Honey Sales	55096.00	lbs	43,102.90	54.29	.28
2. Bulk Honey Inventory	27395.20	lbs	19,053.89	24.00	
3. Consumer Pack Sales	4780.00	lbs	8,466.00	10.66	
4. Consumer Pack Inventory	66372.00	lbs	47,822.14	60.23	
5. Other Honey Sales	542.00	lbs	271.00	.34	
6. Wax/Pollen/Other Sales	1034.00	lbs	3,091.50	3.89	
7. Crop Insurance Receipts			2,185.20	2.75	
8. Miscellaneous Receipts			0.00	0.00	
9. Less: Honey Purchase for Resale			150.00	.19	
VALUE OF PRODUCTION			**124,142.63**	**156.35**	**.81**
(B)					
1. Bee Purchases - Package Bees			925.00	1.16	
2. Bee Purchases - Queens			2,656.40	3.35	
3. Freight & Trucking			947.60	1.19	
4. Feed - Sugar			10,159.00	12.79	
5. Medicinal Sugar/Bee Repellent			1,939.00	2.44	
6. Product & Crop Insurance			228.80	.29	
7. Fuel			5,239.00	6.60	
8. Repairs - Machine			6,744.40	8.49	
9. Repairs - Buildings & Improvements			3,349.93	4.22	
10. Utilities & Heating Fuel			3,940.40	4.96	
11. Custom Work & Machine Rental			2,997.40	3.78	
12. Assoc. Dues, Prof'l Fees, Promotion & Travel			3,721.20	4.69	
13. Small Tools, Supplies & Miscellaneous Expenses			5,944.80	7.49	
14. Operating Interest			1,881.98	2.37	
15. Paid Labour & Benefits	1659.80	hours	16,523.80	20.81	
16. Unpaid Labour	1480.60	hours	15,546.30	19.58	
VARIABLE COSTS			**82,745.00**	**104.21**	**.54**
(C)					
1. Land Rent / Lease, Bldg. Rent & Forage Access			525.00	.66	
2. Taxes, Licences & General Insurance			4,245.60	5.35	
3. Equipment & Building a) Depreciation			29,118.87	36.67	
b) Lease Payments			0.00	0.00	
4. Paid Capital Interest			7,689.48	9.68	
TOTAL CAPITAL COSTS			**41,578.95**	**52.37**	**.27**
(D) **CASH COSTS**	(B+C-B16-C3a)		**79,658.78**	**100.33**	**.52**
(E) **TOTAL PRODUCTION COSTS**	(B+C)		**124,323.95**	**156.58**	**.81**
(F) **GROSS MARGIN**	(A-D)		**44,483.85**	**56.02**	**.29**
RETURN TO UNPAID LABOUR	(A-E+B16)		**15,364.98**	**19.35**	**.10**
RETURN TO INVESTMENT	(A-E+C4)	2.4 %	**7,508.15**	**9.46**	**.05**
RETURN TO EQUITY	(A-E)		**(181.32)**	**(.23)**	**(.00)**

MANAGEMENT

Number of Hives	794.00
Average Yield per Hive (Lbs.)	194.19
Honey Produced (Lbs.)	154,185.20

Table 13 **Honey Production Enterprise Investment, Alberta By size of operation (600 - 1000 Hives) 1999**

INVESTMENT SUMMARY:		**Total $**		**$/Hive**
Land	7.00 acres	4,625.00		5.82
Buildings		62,540.00		78.77
Bee Equipment		208,737.60		262.89
Machinery		37,435.00		47.15
TOTAL INVESTMENT		**313,337.60**		**394.63**
INVESTMENT DETAIL:		Enterprise Value ($)	Age (Years)	Depreciation ($)
Land		**4,625.00**		
Honey House		35,880.00	16.80	1,794.00
Wintering Shed		4,800.00	.40	240.00
Houses(25%)		4,900.00	19.35	245.00
Other Bldgs		16,960.00	12.16	848.00
Buildings Sub-Total		**62,540.00**		**3,127.00**
Hives		143,200.00	24.20	16,468.00
Pallets		3,030.00	14.20	348.45
Fork Lift		8,500.00	0.00	680.00
Hive Feeders		3,640.00	12.00	418.60
Super Elevator		0.00	0.00	0.00
Uncapping Machines		3,900.00	10.40	312.00
Honey Extractor		4,100.00	16.40	328.00
Dryer/Heat Exchanger		0.00	0.00	0.00
Wax Spinner/Separator		1,480.00	10.80	118.40
Honey Tank & Pipe		5,620.00	13.20	646.30
Feed Tank		2,500.00	6.66	287.50
Storage Vessel		0.00	0.00	0.00
Boiler Furnace		600.00	10.00	48.00
Water System		0.00	0.00	0.00
Compressor		350.00	4.20	28.00
Pressure Washer		359.00	4.60	28.72
Fuel Tank		0.00	0.00	0.00
Scales		636.00	15.80	73.14
Barrels		2,069.40	1.40	237.98
Barrel Loader		0.00	0.00	0.00
Carts		450.00	15.00	51.75
Fencers / Shockers		703.20	8.62	80.87
Shop Tools		7,700.00	6.00	885.50
Staplers		662.00	1.40	76.13
Office Equipment		0.00	0.00	0.00
Lawn Mower		1,780.00	5.20	142.40
Over-Wintering Insulation		2,965.00	3.20	340.98
Miscellaneous Equipment		14,493.00	12.06	1,330.90
Equipment Sub - Total		**208,737.60**		**22,931.62**
Trucks		23,620.00	11.21	1,889.60
Tractors		3,800.00	10.20	304.00
Other Mach.		10,015.00	8.86	651.60
Power Equipment Sub - Total		**37,435.00**		**2,845.20**
TOTAL INVESTMENT		**313,337.60**		**28,903.82**

1188 to 3400 hives, with an average of 2,568 hives per operation. Average yield per hive for this group was 136 pounds. Details on honey sales and other income are presented in Table 14.

Variable Costs:

Average variable costs for the largest group of honey producers (over 1,000 hives) were estimated at $80 per hive or $0.59 per pound of honey produced. The most significant cash cost items for this group were paid labour and benefits followed by unpaid labour, sugar and supplies and miscellaneous expenses.

Operator and family labour amounted to $13 per hive for this group. When operator and family labour costs were taken out from the variable costs, cash cost per average apiarist in this group amounted to $73 per hive or $0.53 per pound of honey produced.

Capital Costs:

Capital costs (land/rent/lease, depreciation for buildings, bee equipment, vehicles and capital interest paid) for Group VI participants (over 1,000 hives) were calculated to be $88,342 per operation or $34 per hive ($0.25 per pound of honey produced). This group of participants had the lowest capital interest paid, at about $2 per hive among the three groups analyzed by the size of beekeeping operation.

Total Production Costs:

Average total production costs for the largest group of honey producers (Group VI - over 1,000 hives) amounted to $114 per hive for a 2,568 hive operation. In terms of per pound of honey produced, cost of production was $0.84 in 1999. Cash costs for an average honey operation in this group were about 63 percent of the total production costs. Labour cost (operator-unpaid) was 11 percent of the total production costs and the balance (26 percent) were capital costs.

Management Indicators:

Average gross margin, based on total value of production was $35 per hive for the Group VI participants, or $0.25 per pound of honey produced. Return to investment was negative at $5 and equity by $7 per hive. Details on cash costs, operator and family labour, capital costs and management indicators are presented in Table 14.

Investment Costs:

Investment and investment costs for the largest group of honey (over 1,000 hives) are shown in Table 18. Land area associated with the beekeeping operations was about 11 acres, valued at $12,564. Average building investment amounted to $125,440 or $49 per hive. Investment in bee equipment was $206 per hive. Investment in vehicles and other machinery was $112,235 per operation or $44 per hive. Total investment for Group VI participants amounted to $778,537 or $303 per hive. Details on all investment items are presented in Table 15.

Table 14 **Honey Production Costs and Returns,**
Alberta By size of operation (over 1000 Hives) 1999

			Total $	$/Hive	$/Lb.
(A)					
1. Bulk Honey Sales	199604.20	lbs	154,625.35	60.22	.44
2. Bulk Honey Inventory	36478.00	lbs	28,935.40	11.27	
3. Consumer Pack Sales	90.00	lbs	108.00	.04	
4. Consumer Pack Inventory	113200.00	lbs	79,240.00	30.86	
5. Other Honey Sales	999.60	lbs	749.70	.29	
6. Wax/Pollen/Other Sales	5728.60	lbs	11,775.57	4.59	
7. Crop Insurance Receipts			0.00	0.00	
8. Miscellaneous Receipts			391.40	.15	
9. Less: Honey Purchase for Resale			0.00	0.00	
VALUE OF PRODUCTION			**275,825.42**	**107.43**	**.79**
(B)					
1. Bee Purchases - Package Bees			20,929.20	8.15	
2. Bee Purchases - Queens			7,643.94	2.98	
3. Freight & Trucking			1,158.40	.45	
4. Feed - Sugar			27,156.50	10.58	
5. Medicinal Sugar/Bee Repellent			9,825.38	3.83	
6. Product & Crop Insurance			909.00	.35	
7. Fuel			4,524.80	1.76	
8. Repairs - Machine			9,686.00	3.77	
9. Repairs - Buildings & Improvements			4,192.02	1.63	
10. Utilities & Heating Fuel			4,155.91	1.62	
11. Custom Work & Machine Rental			5,175.20	2.02	
12. Assoc. Dues, Prof'l Fees, Promotion & Travel			4,449.40	1.73	
13. Small Tools, Supplies & Miscellaneous Expenses			22,783.50	8.87	
14. Operating Interest			4,524.80	1.76	
15. Paid Labour & Benefits	4230.40	hours	45,317.12	17.65	
16. Unpaid Labour	3122.63	hours	32,787.61	12.77	
VARIABLE COSTS			**205,218.78**	**79.93**	**.59**
(C)					
1. Land Rent / Lease, Bldg. Rent & Forage Access			1,833.80	.71	
2. Taxes, Licences & General Insurance			8,457.55	3.29	
3. Equipment & Building a) Depreciation			73,655.99	28.69	
b) Lease Payments			0.00	0.00	
4. Paid Capital Interest			4,394.60	1.71	
TOTAL CAPITAL COSTS			**88,341.94**	**34.41**	**.25**
(D) **CASH COSTS**	(B+C-B16-C3a)		**187,117.11**	**72.88**	**.53**
(E) **TOTAL PRODUCTION COSTS**	(B+C)		**293,560.72**	**114.33**	**.84**
(F) **GROSS MARGIN**	(A-D)		**88,708.31**	**34.55**	**.25**
RETURN TO UNPAID LABOUR	(A-E+B16)		**15,052.32**	**5.86**	**.04**
RETURN TO INVESTMENT	(A-E+C4)	-1.7 %	**(13,340.70)**	**(5.20)**	**(.04)**
RETURN TO EQUITY	(A-E)		**(17,735.30)**	**(6.91)**	**(.05)**

MANAGEMENT

Number of Hives	2,567.60
Average Yield per Hive (Lbs.)	136.46
Honey Produced (Lbs.)	350,371.80

Table 15 **Honey Production Enterprise Investment, Alberta By size of operation (over 1000 Hives) 1999**

INVESTMENT SUMMARY:		Total $	$/Hive
Land	11.22 acres	12,564.00	4.89
Buildings		125,440.65	48.86
Bee Equipment		528,297.60	205.76
Machinery		112,235.20	43.71
TOTAL INVESTMENT		**778,537.45**	**303.22**

INVESTMENT DETAIL:	Enterprise Value ($)	Age (Years)	Depreciation ($)
Land	**12,564.00**		
Honey House	101,184.40	6.00	5,059.22
Wintering Shed	0.00	0.00	0.00
Houses(25%)	7,776.25	6.80	388.81
Other Bldgs	16,480.00	13.41	824.00
Buildings Sub-Total	**125,440.65**		**6,272.03**
Hives	407,289.20	7.60	46,838.26
Pallets	13,300.00	3.20	1,529.50
Fork Lift	0.00	0.00	0.00
Hive Feeders	1,820.00	6.80	209.30
Super Elevator	0.00	0.00	0.00
Uncapping Machines	12,700.00	11.40	1,016.00
Honey Extractor	16,800.00	8.80	1,344.00
Dryer/Heat Exchanger	2,013.00	6.80	161.04
Wax Spinner/Separator	5,600.00	9.60	448.00
Honey Tank & Pipe	4,920.00	9.35	565.80
Feed Tank	3,170.00	10.40	364.55
Storage Vessel	0.00	0.00	0.00
Boiler Furnace	1,470.00	5.40	117.60
Water System	0.00	0.00	0.00
Compressor	466.00	7.00	37.28
Pressure Washer	1,537.20	6.80	122.98
Fuel Tank	0.00	0.00	0.00
Scales	2,114.00	4.60	243.11
Barrels	648.00	.40	74.52
Barrel Loader	0.00	0.00	0.00
Carts	1,590.00	7.26	182.85
Fencers / Shockers	470.00	4.80	54.05
Shop Tools	4,760.00	3.60	547.40
Staplers	880.00	4.80	101.20
Office Equipment	1,187.80	.60	95.02
Lawn Mower	1,530.00	5.20	122.40
Over-Wintering Insulation	11,828.20	6.00	1,360.24
Miscellaneous Equipment	32,204.20	6.86	2,794.88
Equipment Sub - Total	**528,297.60**		**58,329.98**
Trucks	80,001.00	6.81	6,400.08
Tractors	2,000.00	2.20	160.00
Other Mach.	30,234.20	2.21	2,079.06
Power Equipment Sub - Total	**112,235.20**		**8,639.14**
TOTAL INVESTMENT	**778,537.45**		**73,241.15**

SECTION VI

COSTS AND RETURNS FOR POLLINATING HIVES

Honey bees have been used for pollinating crops to improve yield and seed production for centuries. In Alberta, commercial use of honey bees to pollinate crops started six/seven years ago with introduction of transgenic canola. Other crops for which bees have been used for pollination are borage, alfalfa and clover, etc. Over the last few years, the number of pollinating hives has quadrupled, i.e., from about 20,000 hives in 1996 to over 80,000 hives in 1999. During the last few years number of pollinating hives continued to increase as the area for transgenic canola and other crops expanded. However, due to some concerns regarding the markets for hybrid canola, demand for pollinating hives decreased marginally for the 2000 crop.

Eight (8) beekeepers who rented their hives for pollination purposes provided detailed information on their operations for the 1999 production year. These eight were in addition to the sixteen beekeepers who were primarily involved in honey production. Before we discuss costs and returns data for this group of beekeepers, readers or users of this report, please note that almost 85 percent of the income for this group was generated from renting bee hives for pollination purposes. Balance of the income was received from honey sales, wax and pollen and miscellaneous receipts.

The total number of hives for the pollination group of beekeepers was 31,450. Average yield for honey production was almost 52 pound per hive in 1999. Average honey production per operation for this group was 202,605 pounds per beekeeping operation. Almost 44 percent of the honey produced was sold as bulk honey and remainder in consumer pack sales and kept as consumer pack inventory. Average wax sales amounted to $11,137 per operation.

Average honey sales (bulk, consumer pack sales and inventory, wax/pollen sales and miscellaneous receipts) for this group amounted to $159,177 for a 3,931 bee hive operation, or $40.49 per hive ($0.79 per pound of honey produced). When hive rental income for pollination was combined with honey sales, average value of production increased to $512,331 per operation. In terms of income per hive, it was estimated at $130 for the 1999 honey production year.

Variable Costs:

Average variable costs for the pollination group of beekeepers were estimated at $393,175 per operation of 3,931 hives or $100 per hive. Paid labour and benefits was the leading expense item at $34 per hive, followed by expenses for bee purchases and sugar. Other notable expenses for this group were supplies and miscellaneous expenses, unpaid labour and machine repairs.

Capital Costs:

Average capital costs for the eight beekeepers in the pollination group were estimated at $171,535 per operation or $44 per hive. The most significant cost item for this group was equipment and building depreciation at $32 per hive.

Cash Costs:

Average cash costs for the 1999 production year amounted to $408,306 per operation or $104 per hive for the pollination beekeepers group. Cash costs as mentioned earlier represent costs that are out-of-pocket expenses incurred during the production period. These costs do not include expenses for unpaid labour and equipment and building depreciation.

Total Production Costs:

Average total production costs for the pollination beekeepers group were calculated at $564,710 per operation. In terms of total production cost per hive, it was $144 for an average pollination operation. Total production cost comprised of over 70 percent variable costs and about 30 percent capital costs.

Management Indicators:

Average gross margin for the pollination group of beekeepers was $104,024 per operation or $26 per hive. Return to unpaid labour for this group was negative at $21,108 per operation ($5 per hive). Average return to investment and equity were also negative at $5 and $13 per hive, respectively.

Details on value of production, variable costs, capital costs, total production costs, gross margin, return to unpaid labour, investment and equity are presented in Table 16.

Investment Costs:

Investment in land, buildings, bee equipment and machinery (vehicles) for the pollination group of beekeepers was estimated at $1,266,187 per operation or $332 per hive in 1999. The most significant cost item for this group was also bee equipment at $241 per hive, followed by buildings at $44 per hive and machinery (vehicles) at $36 per hive. Table 17 presents details on investment for the pollination group of beekeepers.

Table 16 **Pollination Production Costs and Returns, Alberta 1999**

			Total $	$/Hive	$/Lb.
(A)					
1. Bulk Honey Sales	122812.50	lbs	89,825.00	22.85	.44
2. Bulk Honey Inventory	0.00	lbs	0.00	0.00	
3. Consumer Pack Sales	3875.00	lbs	4,062.50	1.03	
4. Consumer Pack Inventory	72000.00	lbs	51,087.50	13.00	
5. Other Honey Sales	3917.63	lbs	2,820.69	.72	
6. Wax/Pollen/Other Sales	6045.63	lbs	11,136.88	2.83	
7. Crop Insurance Receipts			0.00	0.00	
8. Miscellaneous Receipts			244.63	.06	
9. Less: Honey Purchase for Resale			184.63	.05	
10. Hive Rental - Pollination			352,968.75	110.52	
VALUE OF PRODUCTION			**512,330.57**	**130.32**	**2.53**
(B)					
1. Bee Purchases - Package Bees			59,871.00	15.23	
2. Bee Purchases - Queens			15,677.69	3.99	
3. Freight & Trucking			4,612.25	1.17	
4. Feed - Sugar			45,088.32	11.47	
5. Medicinal Sugar/Bee Repellent			11,089.00	2.82	
6. Product & Crop Insurance			211.00	.05	
7. Fuel			12,460.75	3.17	
8. Repairs - Machine			16,250.88	4.13	
9. Repairs - Buildings & Improvements			5,916.63	1.51	
10. Utilities & Heating Fuel			7,556.50	1.92	
11. Custom Work & Machine Rental			5,137.13	1.31	
12. Assoc. Dues, Prof'l Fees, Promotion & Travel			10,587.00	2.69	
13. Small Tools, Supplies & Miscellaneous Expenses			28,326.50	7.21	
14. Operating Interest			4,086.88	1.04	
15. Paid Labour & Benefits	12987.93	hours	135,031.70	34.35	
16. Unpaid Labour	2978.25	hours	31,271.63	7.95	
VARIABLE COSTS			**393,174.83**	**100.01**	**1.94**
(C)					
1. Land Rent / Lease, Bldg. Rent & Forage Access			3,431.25	.87	
2. Taxes, Licences & General Insurance			9,831.38	2.50	
3. Equipment & Building a) Depreciation			125,131.94	31.83	
b) Lease Payments			0.00	0.00	
4. Paid Capital Interest			33,140.50	8.43	
TOTAL CAPITAL COSTS			**171,535.07**	**43.63**	**.85**
(D) **CASH COSTS** (B+C-B16-C3a)			**408,306.33**	**103.86**	**2.02**
(E) **TOTAL PRODUCTION COSTS** (B+C)			**564,709.90**	**143.65**	**2.79**
(F) **GROSS MARGIN** (A-D)			**104,024.23**	**26.46**	**.51**
RETURN TO UNPAID LABOUR (A-E+B16)			**(21,107.71)**	**(5.37)**	**(.10)**
RETURN TO INVESTMENT (A-E+C4)		-1.5 %	**(19,238.83)**	**(4.89)**	**(.09)**
RETURN TO EQUITY (A-E)			**(52,379.33)**	**(13.32)**	**(.26)**

MANAGEMENT

Number of Hives	3,931.25
Average Yield per Hive (Lbs.)	51.54
Honey Produced (Lbs.)	202,605.13

Table 17 Pollination Production Enterprise Investment, Alberta 1999

INVESTMENT SUMMARY:		Total $	$/Hive
Land	11.38 acres	5,370.63	1.37
Buildings		171,720.31	43.68
Bee Equipment		946 259.00	240.70
Machinery		142,837.50	36.33
TOTAL INVESTMENT		**1,266,187.44**	**322.08**

INVESTMENT DETAIL:	Enterprise Value ($)	Age (Years)	Depreciation ($)
Land	**5,370.63**		
Honey House	85,000.00	16.13	4,250.00
Wintering Shed	0.00	0.00	0.00
Houses(25%)	10,851.56	24.50	542.58
Other Bldgs	75,868.75	10.00	3,793.44
Buildings Sub-Total	**171,720.31**		**8,586.02**
Hives	751,616.50	6.17	86,435.90
Pallets	33,359.38	6.25	3,836.33
Fork Lift	10,250.00	0.00	820.00
Hive Feeders	7,087.50	4.38	815.06
Super Elevator	0.00	0.00	0.00
Uncapping Machines	2,500.00	8.00	200.00
Honey Extractor	18,937.50	6.00	1,515.00
Dryer/Heat Exchanger	1,133.13	2.50	90.65
Wax Spinner/Separator	3,750.00	5.50	300.00
Honey Tank & Pipe	3,950.00	13.59	454.25
Feed Tank	4,175.00	6.88	480.13
Storage Vessel	0.00	0.00	0.00
Boiler Furnace	1,537.50	6.88	123.00
Water System	0.00	0.00	0.00
Compressor	1,081.25	10.50	86.50
Pressure Washer	1,549.38	3.38	123.95
Fuel Tank	0.00	0.00	0.00
Scales	2,393.75	8.75	275.28
Barrels	3,962.50	3.25	455.69
Barrel Loader	0.00	0.00	0.00
Carts	812.50	6.50	93.44
Fencers / Shockers	25.00	2.50	2.88
Shop Tools	12,500.00	3.25	1,437.50
Staplers	647.50	2.50	74.46
Office Equipment	250.00	0.00	20.00
Lawn Mower	1,400.00	4.13	112.00
Over-Wintering Insulation	17,015.63	2.50	1,956.80
Miscellaneous Equipment	66,325.00	6.44	5,337.06
Equipment Sub - Total	**946,259.00**		**105,045.87**
Trucks	125,037.50	7.05	10,003.00
Tractors	0.00	0.00	0.00
Other Mach.	17,800.00	7.07	1,277.00
Power Equipment Sub - Total	**142,837.50**		**11,280.00**
TOTAL INVESTMENT	**1,266,187.44**		**124,911.88**

SECTION VII

SUMMARY

This section provides a summary of the value of production (bulk honey sales and inventory, consumer pack sales and inventory, and any other honey sales, receipts from wax/pollen, crop insurance receipts, and miscellaneous income). It also provides estimates of cash costs, operator and family labour, capital costs and management indicators for the study sample of 16 beekeepers across the province for the 199 honey crop. A gist of this information is also presented for the various groups by region and size of operation in Table 18.

Average yield per hive for the study sample was 148 pounds during the 1999 production year. This number is slightly higher than the provincial average which was estimated at 121 pounds per hive. When yield per hive was compared among the groups by region, it ranged from 131 pounds for Group II (North-West Region) to about 198 pounds for Group I (Southern, Central and North East - Table 18).

Average total value of production (bulk honey sales, other honey sales and miscellaneous income) was $118 per hive for the study sample. It ranged from $104 per hive in the North West Region to $161 per hive in the Southern, Central and North-East Regions. By size of operation, average value of production ranged from $106 per hive for Group IV (under 600 hives) to $157 per hive for Group V (601 to 1,000 hives).

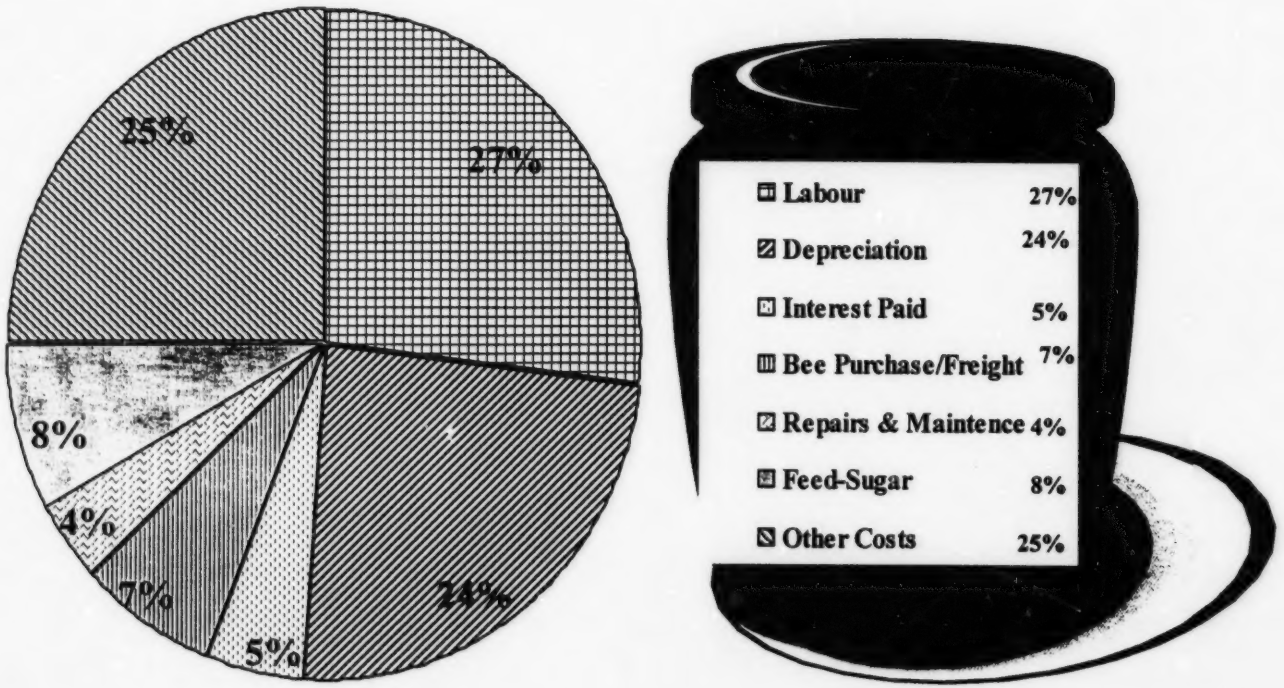
Details on cash costs (input costs, feed-sugar and hired labour). operator and family labour, capital costs are also presented in Table 18 for the study sample (Alberta), by regions and size of operation. Average total production cost was estimated at $129 per hive for the study sample ($0.87 per pound of honey produced). Figure 5 shows the relative proportions of all costs for honey production in Alberta. These costs ranged from $109 per hive in North-West Region to $169 per hive in Southern, Central and North-East Regions. By size of operation, total production cost ranged from $114 per hive ($0.84 per pound) for Group VI (over 1,000 hives) to 157 hive ($0.81 per pound) for Group V (601 to 1,000 hives). Average total production cost was $153 per hive ($1.16 per pond of honey produced) for the honey producers in Group IV (up to 600 hives).

TABLE 18: Summary of Honey Production Costs and Returns by Regions and Size of Operation, 1999

	ALBERTA		OUTHERN,CENTRA NE REGIONS		NORTH-WEST REGION		PEACER RIVER REGIONS		UP TO 600 HIVES		601 - 1,000 HIVES		OVER 1,000 HIVES	
Average Number of Hives	1,154		698		1,731		722		277		794		2,568	
	Per Hive	Per Lbs Produced	Per Hive	Per Lbs Produced	Per Hive	Per Lbs Produced	Per Hive	Per Lbs Produced	Per Hive	Per Lbs Produced	Per Hive	Per Lbs Produced	Per Hive	Per Lbs Produced
Average Yield Per Hive(lbs)	148.41		198.49		131.02		148.86		131.33		194.19		136.46	
Bulk Honey Sales ($)	61.48	0.41	100.45	0.51	52.72	0.4	35.13	0.24	88.39	0.67	54.29	0.28	60.22	0.44
Other Honey Sales/Inventory	56.18	0.38	60.28	0.3	51.43	0.39	74.9	0.5	17.14	0.13	102.06	0.53	47.05	0.35
Miscellaneous Income	0.11	0	0	0	0.16	0	0	0	0	0	0	0	0.16	0
TOTAL VALUE OF PRODUCTION ($)	**117.77**	**0.79**	**160.73**	**0.81**	**104.31**	**0.8**	**110.03**	**0.74**	**105.53**	**0.8**	**170.53**	**0.81**	**107.43**	**0.79**
CASH COSTS ($)	52.46	0.35	81.06	0.41	41.32	0.32	59.54	0.4	78.74	0.6	66.73	0.34	44.65	0.33
Feed - Sugar	10.57	0.07	12.59	0.06	9.52	0.07	12.49	0.08	5.15	0.04	12.79	0.07	10.58	0.08
Hired Labour	17.03	0.12	18.04	0.09	16.33	0.12	19.01	0.13	3.23	0.02	20.81	0.11	17.65	0.12
A Total Cash Costs ($)	80.06	0.54	111.69	0.56	67.17	0.51	91.04	0.61	87.12	0.66	100.33	0.52	72.88	0.53
B Operator & Family Labour	18.29	0.12	24.13	0.12	13.79	0.11	25.06	0.17	35.39	0.26	19.58	0.1	12.77	0.1
C Capital Costs	30.6	0.21	32.95	0.17	27.66	0.21	42.53	0.29	32.02	0.24	36.67	0.19	28.7	0.21
TOTAL PRODUCTION COSTS-$(A+B+C)	**128.94**	**0.87**	**168.77**	**0.85**	**108.6**	**0.83**	**158.64**	**1.07**	**152.53**	**1.16**	**156.58**	**0.81**	**114.33**	**0.84**
RETURN OVER CASH COSTS ($)	37.71	0.25	49.05	0.25	37.14	0.28	18.99	0.13	18.41	0.14	56.02	0.29	34.55	0.25
RETURN TO INVESTMENT ($)	-6.96	-0.05	2.68	0.01	-2.64	-0.02	-42.69	-0.29	-36.59	-0.28	9.46	0.05	-5.2	-0.04
RETURN TO EQUITY ($)	-11.17	-0.08	-8.04	-0.04	-4.29	-0.03	-48.61	-0.33	-47.01	-0.36	-0.23	0	-6.91	-0.05
AV. INVESTMENT PER HIVE ($)	336.69	2.27	357.4	1.8	295.62	2.26	478.56	3.22	352.58	2.68	394.63	2.03	303.22	2.22

Includes honey inventory and wax/pollen/other sales

Figure 5: Breakdown of Honey Production Costs, 1999



Returns to value of honey production over cash costs were positive for the study sample and all groups (by regions and size of operation). The highest gross margin was $49 per hive for the honey producers in the Southern, Central and North Eastern regions. It was $37 in the North West region and $19 per hive in the Peace River region. Average gross margin was $38 per hive for the study sample in 1999. Gross margin for honey producers by regions ranged form $19 per hive for Group III (Peace River region) to $49 per hive for Group I (Southern, Central and North East regions) producers. Average return to unpaid labour for the study sample was positive at $7 per hive. However, returns to investment and equity were negative at $7 and $11 per hive, respectively.

Return to unpaid labour was positive for the beekeepers in Group I (Southern, Central and North East regions) and Group II (North West region) at $16 and $9 per hive, respectively. It was negative by almost $24 per hive for beekeepers in Group III (Peace River region). Return to unpaid labour was negative at $12 per hive for Group IV (up to 600 hives) beekeepers. For the other two groups by size of operation, i.e., Group V (601 to 1,000 hives) and Group VI (over 1,000 hives), it was positive at $19 and $6 per hive, respectively. Returns to equity for all six groups (by region and size operation) were negative including the study sample.

Details on management indicators for the study sample, by region and size of operation are presented in Table 18. Average investment per hive for the various groups, including the study sample, are also given in this table. In 1999, investment per hive for the study sample of 16 beekeepers was $337. It amounted to$322 per hive for the beekeepers in the pollination group. By regions, investment per hive ranged from $296 for Group II to $479 for Group III (Peace River Region). By size of operation, average investment per hive was the lowest at $303 for Group VI (over 1,000 hives), $352 fro Group IV (up to 600 hives) and $396 for Group V (600 to 1,000 hives) beekeepers.